

THE ALOS PALSAR MOSAIC OVER THE AFRICAN CONTINENT – A REFERENCE BASELINE DATASET FOR FOREST- AND LAND COVER CHANGE MONITORING

Ake Rosenqvist and Frank De Grandi

Joint research Centre of the European Commission

1. GLOBAL-SCALE SAR MOSAIC GENERATION AT 50 M RESOLUTION

Within the framework of the ALOS Kyoto & Carbon Initiative – an international research collaboration led by the Japan Aerospace Exploration Agency (JAXA) and the Joint research Centre of the European Commission (JRC) – 50 m resolution ALOS PALSAR mosaics are presently being generated to cover all land areas of the Earth.

The mosaics are generated from the original 20 m resolution L-band SAR data, acquired in HH and HV polarisations. While ALOS PALSAR features a full-polarisation option, the dual-polarisation mode was selected as trade-off between mission programmatic restrictions and thematic information. To facilitate more rapid processing and file handling, the data are processed as extended strip images, 70 km in width and up to some 3000 km long, and filtered to 50 m pixels spacing to reduce speckle and data amounts.

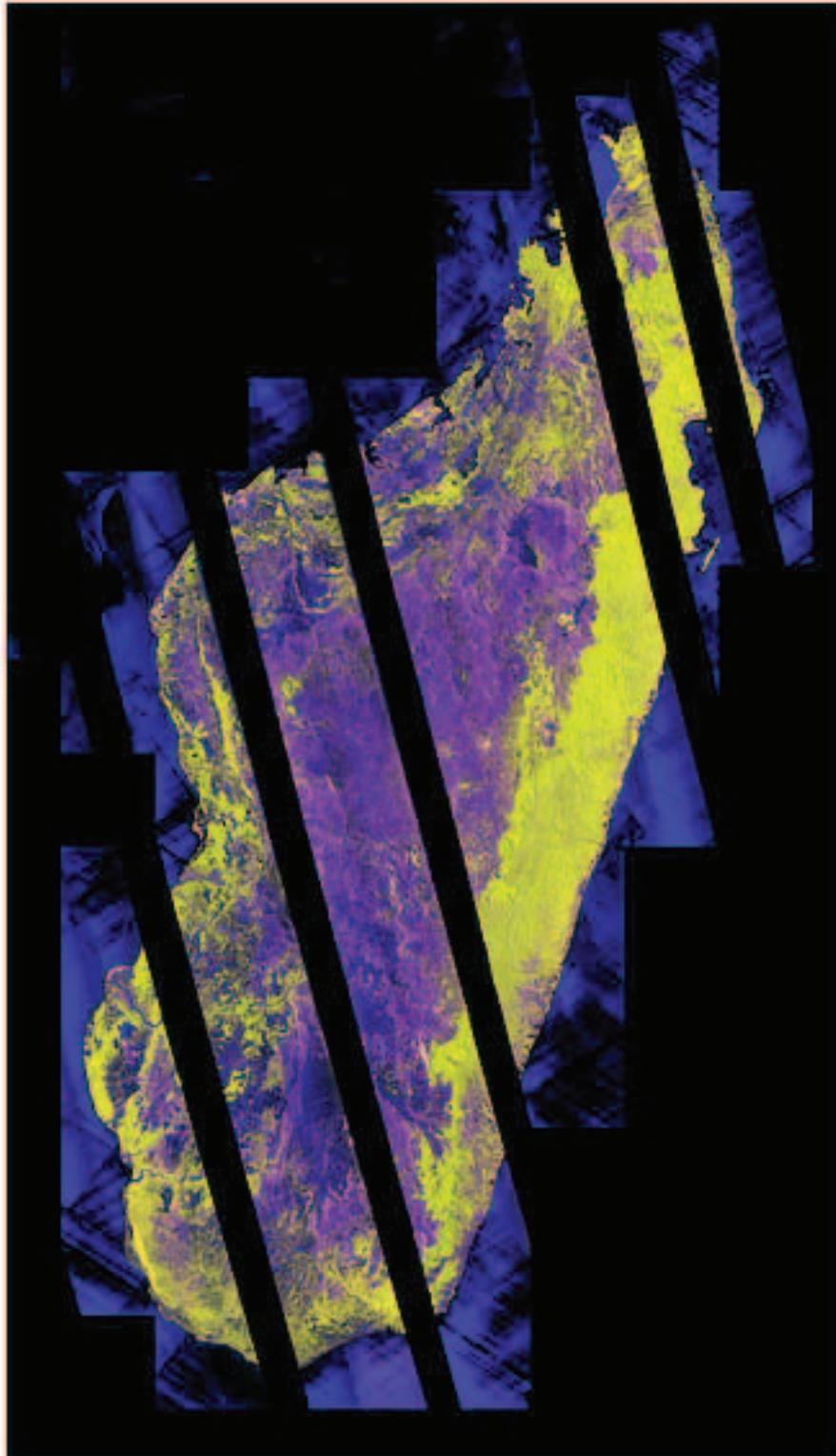
To date (Jan. 2009), mosaics have been completed over South-East Asia, generated by JAXA who also are responsible for product generation over Asia and Oceania. The NASA Jet Propulsion Laboratory (JPL) covers North and South America, while the JRC is tasked with Siberia, Europe and Africa.

All mosaics are being made available as they are produced (http://www.eorc.jaxa.jp/ALOS/kc_mosaic/kc_mosaic.htm), free of charge for the user community for non-commercial purposes. The first set of mosaics are generated from data acquired in mid-2007 and over the tropical belt (SE-Asia, Central Africa, South- and Central America), products are foreseen to be generated on an annual basis, using data acquired within the ALOS Systematic Observation Strategy, using data from 2008, 2009 and onwards. The objective is to provide a fine resolution (50m) pan-tropical baseline data set that can be used for forest- and land cover change monitoring in general, and to support the UN REDD process (Reduction of Emissions from Deforestation and forest Degradation) in particular.

2. THE AFRICA MOSAIC

While the mosaics generated by the JRC, JAXA and JPL are to be similar in terms of spatial resolution, projection etc., the approaches to get there differ between the agencies. This paper focuses on the geometric, radiometric and thematic aspects of the mosaic covering the African continent,

Figure 1 shows a prototype version of a section of the canvas, covering the island of Madagascar. The image is a false colour composite (R:HH, G:HV, B:HH/HV) that enhances contrast between different land cover types. The mosaic is scheduled to be completed by the JRC during the spring of 2009.



*Figure 1. Prototype mosaic over Madagascar (Aug-Oct., 2007).
Original mosaic pixel spacing 50m (R:HH, G:HV, B:HH/HV).
In general, natural forest and certain forest plantations appear in green, while grasses, bare soil and certain other forest plantations (e.g palm trees) show a purple tone. Water is black or blue.*